What is claimed is:

1   1.   A system, comprising:
2   plural storage subsystems, each storage subsystem having a controller, an
3   expander, and zero or more storage devices coupled to the expander, the controller to access
4   storage devices through the expander, and the expander having interfaces for coupling to
5   storage devices; and
6   an intercontroller link to connect expanders in different storage subsystems to
7   enable the controller in one of the storage subsystems to communicate with the controller in
8   another one of the storage subsystems through the expanders and the intercontroller link.

1   2.   The system of claim 1, wherein the controller, expander, and zero or more
2   storage devices in each storage subsystem are coupled by a serial interconnect.

1   3.   The system of claim 1, wherein each of the storage subsystems have expanders
2   at plural levels, the intercontroller link connecting expanders in the two storage subsystems at
3   a first level, the system further comprising another intercontroller link to connect expanders
4   in the two storage subsystems at a second level.

1   4.   The system of claim 1, wherein each storage subsystem includes serial
2   attached small computer system interface (SAS) phys.

1   5.   The system of claim 4, wherein at least one of the expanders includes a SAS
2   phy connected to the intercontroller link, wherein the at least one of the expanders includes a
3   route table for the SAS phy, the route table containing a plurality of entries for routing
4   information in the storage subsystem.

1   6.   The system of claim 5, wherein each of the expanders includes a route table
2   for the SAS phy connected to the intercontroller link, and the route table is programmed
3   differently than route tables for SAS phys not connected to the intercontroller link.

1   7.   The system of claim 4, wherein each of the expanders includes one or more
2   SAS phys connected to the intercontroller link and one or more SAS phys connected to other

3 components of the storage subsystem, the system further comprising software to access the

4 storage subsystem,

5 wherein the one or more SAS phys connected to other components of the

6 storage subsystem are visible to normal SAS discovery software but the one or more SAS

7 phys connected to the intercontroller link are not visible to the SAS discovery software.

1   8.   The system of claim 1, further comprising:

2   plural computers comprising respective plural storage subsystems.

1   9.   The system of claim 1, wherein each of the two storage subsystems has

2 expanders at plural levels, the intercontroller link coupling expanders in the two storage

3 subsystems.

1   10.   The system of claim 1, wherein each of the two storage subsystems has

2 expanders at plural levels, wherein each of the expanders is coupled to zero or more storage

3 devices.

1   11.   The system of claim 10, wherein at least some of the expanders are coupled to

2 one or more storage devices.

1   12.   The system of claim 11, wherein the controller in each of the two storage

2 subsystems is adapted to access the storage devices through one or more expanders.

1   13.   A method for use in a system having plural storage subsystems, each storage

2 subsystem having a controller and an expander, the method comprising:

3   accessing, by the controller in a first one of the storage subsystems, a storage

4 device in the first storage subsystem through the expander in the first storage subsystem; and

5   communicating over an intercontroller link that connects the expander in the

6 first storage subsystem with an expander in a second one of the storage subsystems, wherein

7 the controller in the first storage subsystem communicates with the controller in the second

8 storage subsystem through the intercontroller link and the expanders in the first and second

9 storage subsystems.

14.   The method of claim 13, wherein each of the expanders in the first and second storage subsystems includes a SAS phy connected to the intercontroller link, the method further comprising:

providing a routing table for the SAS phy in each of the first and second storage subsystems; and

populating a plurality of entries in the routing table with routing information.

15.   The method of claim 13, wherein each of the expanders in the first and second storage subsystems includes one or more SAS phys connected to the intercontroller link and one or more SAS phys connected to other components of the storage subsystem, the method further comprising:

enabling the one or more SAS phys connected to other components of the storage subsystems to be visible to normal SAS discovery software;

maintaining the one or more SAS phys connected to the intercontroller link not visible to the SAS discovery software.

16.   The method of claim 13, further comprising accessing, by the controller in the second storage subsystem, a storage device in the second storage subsystem through the expander in the second storage subsystem.

17.   The method of claim 13, further comprising the controllers in the first and second storage subsystems communicating with each other over the intercontroller link to maintain cache coherency.

18.   An expander in a first storage subsystem, comprising:

a first interface to couple to a storage device;

a second interface to couple to an intercontroller link to connect the expander in the first storage subsystem with an expander in a second storage subsystem; and

a controller to communicate with another controller in the second storage subsystem through the second interface and the intercontroller link.

19.   The expander of claim 18, wherein each of the first and second interfaces comprises one or more SAS phys.

20. The expander of claim 19, further comprising a storage to store a route table associated with each SAS phy to couple to the intercontroller link, the route table containing routing information associated with the second storage subsystem.

21. The expander of claim 20, further comprising an additional SAS phy to couple to another expander in the first storage subsystem, the storage further to store a route table associated with the additional SAS phy, wherein the route table for the SAS phy to couple to the intercontroller link is programmed differently than the route table for the additional SAS phy.

22. A system comprising:

plural storage subsystems, each storage subsystem having a means for controlling access to storage devices, and expanding means for coupling to the storage devices; and

means for interconnecting the expanding means in different storage subsystems to enable the controlling means in one of the storage subsystems to communicate with the controlling means in another one of the storage subsystems through the expanding means and the interconnecting means.

23. The system of claim 22, wherein each of the expanding means has a SAS phy to connect to the interconnecting means.